

What is Claimed is:

Sub A-7 1. A wafer blade for picking up wafers on a top surface of the blade and for detecting any undesirable contact with wafers on a bottom surface of the blade comprising:

a blade body of generally elongated shape having a top surface and a bottom surface parallel to each other; and

a strain sensor mounted on and at least partially covers said bottom surface of the blade body.

2. A wafer blade for picking up wafers on a top surface of the blade according to claim 1, wherein said strain sensor is a piezoelectric sensing device.

3. A wafer blade for picking up wafers on a top surface of the blade according to claim 1, wherein said strain sensor is sensitive to at least 1  $\mu$ m strain.

4. A wafer blade for picking up wafers on a top surface of the blade according to claim 1, wherein said blade body is formed in the shape of a fork.

5. A wafer blade for picking up wafers on a top surface of the blade according to claim 1, wherein said blade body is formed in the shape of a rectangle.

6. A wafer blade for picking up wafers on a top surface of the blade according to claim 1, wherein said blade body is formed of metal or ceramic.

7. A wafer blade for picking up wafers on a top surface of the blade according to claim 1, wherein said strain sensor is formed in the shape of a thin film.

8. A wafer blade for picking up wafers comprising:  
a blade body of fork shape having a top surface for picking up wafers and a bottom surface; and  
a piezoelectric sensor mounted on said bottom surface for detecting any undesirable touching with wafers.

9. A wafer blade for picking up wafers according to claim 8, wherein said piezoelectric sensor is a thin film sensor.

10. A wafer blade for picking up wafers according to claim 8, wherein said piezoelectric sensor is capable of detecting a strain imposed on said sensor.

Sub 137 11. A wafer blade for picking up wafers according to claim 8, wherein said blade body is fabricated of a metal or a ceramic that has the rigidity at least that of aluminum.

12. A wafer blade for picking up wafers according to claim 8, wherein said piezoelectric sensor covers substantially the entire surface of said blade body.

13. A wafer blade for picking up wafers according to claim 8, wherein said piezoelectric sensor only covers partially the bottom surface of said blade body.

Sub A47

14. A wafer pick-up system comprising:  
a wafer blade having a blade body of generally elongated shape; said blade body having a top surface and a bottom surface;  
a strain sensor mounted on said bottom surface of the blade body; and  
an alarm device for receiving a signal from said strain sensor when a strain is detected and for sending an alarm signal to alert an operator.

15. A wafer pick-up system according to claim 14, wherein said blade body has a fork shape.

16. A wafer pick-up system according to claim 14, wherein said blade body has a rectangular shape.

17. A wafer pick-up system according to claim 14, wherein said alarm device receives an electrical current from said strain sensor when a strain is detected.

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18. A wafer pick-up system according to claim 14, wherein said alarm device sends a signal to a process controller when a strain is detected by the strain sensor.

19. A wafer pick-up system according to claim 14, wherein said alarm signal is a warning light.

20. A wafer pick-up system according to claim 14, wherein said strain sensor is a piezoelectric thin film sensor.

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